UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,789	10/23/2003	Jun-Kook Choi	SNJ-0048	7185

23413 7590 06/27/2008

CANTOR COLBURN, LLP
20 Church Street
22nd Floor
Hartford, CT 06103

EXAMINER	
WANG, QUAN ZHEN	
ART UNIT	PAPER NUMBER
2613	

MAIL DATE	DELIVERY MODE
06/27/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/691,789	CHOI ET AL.	
	Examiner	Art Unit	
	QUAN-ZHEN WANG	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 April 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/4/2008 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chung et al. (DE 100 50 936 A1) in view of Buerli (U.S. Patent US 5,066,118).

Regarding claim 6, Chung discloses a switching media converter (MC) (figs. 1 and 3, ONU) usable in a wavelength division multiplexing passive optical network (WDM PON) system using the same wavelength for forward and backward channels, comprising:

a master transmitting/receiving unit (fig. 1, element 210) for converting an electrical signal received from an optical network unit into an optical signal, and transmitting the optical signal to a coupler for a master channel, while converting an optical signal received from the coupler for the master channel into an electrical signal, and outputting the electrical signal to the optical network unit;

a slave transmitting/receiving unit (fig. 1, element 220) for converting an electrical signal received from an optical network unit into an optical signal, and transmitting the optical signal to a coupler for a slave channel, while converting an optical signal received from the coupler for the slave channel into an electrical signal, and outputting the electrical signal to the optical network unit;

a control unit (fig. 1, control device 230) for detecting a line breakage (fig. 3, optical fiber breakage), and activating a selected one of the master and slave transmitting/receiving units to utilize a redundant channel such that optical transmission occurs not through the master channel (fig. 1, element 210) but through the slave channel (fig. 1, element 220); and

interfaces (fig. 1, MOD2 and DEM2) respectively connected to the master and slave transmitting/receiving units, each of the interfaces performing a data interfacing operation between an associated one of the master and slave transmitting/receiving units and the optical network unit (devices connected to interfaces MOD2 and DEM2, not shown in fig. 1).

Chung differs from the claimed invention in that Chung does not specifically disclose that the control unit detecting a fiber breakage status based on control program

data stored in an internal memory of the CPU, and detecting whether or not the error event is caused by a reflection. However, it has been well known in the art to detect a fiber breakage status based on control program data stored in an internal memory of the CPU, and detect whether or not the error event is caused by a reflection. For example, Buerli from the same filed of endeavor discloses detect a fiber breakage status based on control program data stored in an internal memory of the CPU, and detect whether or not the error event is caused by a reflection (figs. 2-3). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate the teachings of buerli in the system of Chung. One of ordinary skill in the art would have been motivated to do so in order to locate the fiber breakage (Berli: fig. 3)

Regarding claim 8, Chung further discloses that the control unit disables a transmitter included in the transmitting/receiving unit associated with the currently-activated channel, and detects whether or not a receiver included in the associated transmitting/receiving unit can be switched to a link-on state, thereby determining whether or not a fiber breakage status occurs (fig. 3, optical fiber breakage).

4. Claims 1-5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chung et al. (DE 100 50 936 A1) in view of Van Deventer (U.S. Patent US 5,886,801), and further in view of Buerli (U.S. Patent US 5,066,118).

Regarding claim 1, Chung discloses a ring type wavelength division multiplexing passive optical network (WDM PON) system (figs. 1-3) using the same wavelength for forward and backward channels, comprising: a central office (figs. 1 and 3, CBS) including general media converters (MCs) each having a transmitter adapted to convert an electrical signal into an optical signal to be outputted, and a receiver adapted to receive an optical signal having the same wavelength as the output optical signal, and to convert the received optical signal into an electrical signal to be outputted, and a WDM multiplexer/demultiplexer (MUX/DEMUX) (figs. 1 and 3, WDM) for multiplexing optical signals of different wavelengths respectively outputted from the general MCs, and externally outputting the resultant multiplexed optical signal, the WDM MUX/DEMUX also demultiplexing a multiplexed signal, externally inputted thereto, and outputting the resultant demultiplexed signals to respective general MCs; the optical communication lines constructing a ring type distribution network through bi-directional add/drop devices each coupled to the optical communication lines; and remote nodes (fig. 1 and 3, ONU's) including redundancy MCs respectively coupled to the bi-directional add/drop devices, each of the redundancy MCs functioning to detect a line breakage by checking whether an erroneous event corresponds to a link error (fig. 3, fiber breakage) or a system error, and to transmit an optical signal only in a clockwise or counter-clockwise direction in accordance with the result of the detection; wherein the redundancy MCs each include first and second couplers (fig. 1, the WDM in 210 and 220, respectively) respectively connected to a master channel and a slave channel of the redundancy MCs.

Chung differs from the claimed invention in that Chung does not specifically disclose that, in response to an error event occurring, each of the redundancy MC's is capable of performing a test to determine whether or not the error event is caused by a reflection and, when the error event is caused by a reflection, a redundancy MC of the redundancy MC's initiates a utilization of a redundant channel such that optical transmission occurs not through the master channel but through the slave channel. However, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function alone (see MPEP 2114). If a functional limitation can be performed by the prior art structure, a prima facie case is established (see In re Swinehart, 169 USPQ 226 (CCPA 1971); In re Schreiber, 44 USPQ2d 1429 (Fed. Cir. 1997)). For the instant case, Chung discloses to detecting a line breakage, and the control unit of Chung is capable to detect a reflection from a line breakage. Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to configure the MCs to perform a test in response to an error event to determine whether or not the error is caused by a reflection. One of ordinary skill in the art would have been motivated to do so in order to quickly detect a fiber breakage and restore operability (abstract).

Chung further differs from the claimed invention in that Chung does not specifically disclose a coupler for transmitting the multiplexed signal outputted from the WDM MUX/DEMUX through two different optical communication lines in a distributed manner, while transmitting an optical signal received from any one of the optical communication lines to the WDM MIJX/DEMUX. However, it is well known in the art to

use a coupler for transmitting signals through two different optical communication lines in a distributed manner. For example, Van Deventer discloses using a coupler (fig. 1, power splitter 2) for transmitting signals through two different optical communication lines in a distributed manner. Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate a coupler for transmitting signals through two different optical communication lines in a distributed manner, as it is disclosed by Van Deventer, in the system of Chung in order to simplify the equipment configuration of central office.

The modified system of Chung and Van Deventer differs from the claimed invention in that Chung and Van Deventer do not disclose that the redundancy MCs each includes a CPU and the CPU detecting a fiber breakage status based on control program data stored in an internal memory of the CPU, and detecting whether or not the error event is caused by a reflection. However, it has been well known in the art to detect a fiber breakage status based on control program data stored in an internal memory of the CPU, and detect whether or not the error event is caused by a reflection. For example, Buerli from the same filed of endeavor discloses detect a fiber breakage status based on control program data stored in an internal memory of the CPU, and detect whether or not the error event is caused by a reflection (figs. 2-3). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate the teachings of buerli in the system of Chung. One of ordinary skill in the art would have been motivated to do so in order to locate the fiber breakage (Berli: fig. 3)

5. Claims 7 and 10 rejected under 35 U.S.C. 103(a) as being unpatentable over Chung et al. (DE 100 50 936 A1) in view of Buerli (U.S. Patent US 5,066,118) and further in view of Kowalczyk et al. (U.S. Patent US 5,87,957).

Regarding claim 7, the modified system of Chung and Buerli differs from the claimed invention in that Chung and Burerli do not specifically disclose a buffer arranged at a rear end of the interface connected to the slave transmitting/receiving unit, and adapted to perform a data buffering operation. However, it is well known in the art to include a buffer in a slave transmitting/receiving unit. For example, Kowalczyk discloses a buffer arranged in a slave transmitting/receiving unit, and adapted to perform a data buffering operation (fig. 3, column 3, line 36 to column 4, line 5). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate a buffer in the slave transmitting/receiving unit and adapted to perform a data buffering operation, as it is disclosed by Kowalczyk, in the system of Chung and Buerli in order to prevent data loss in the communication system.

Regarding claim 10, Chung further discloses that the control unit disables a transmitter included in the transmitting/receiving unit associated with the currently-activated channel, and detects whether or not a receiver included in the associated transmitting/receiving unit can be switched to a link-on state, thereby determining whether or not a fiber breakage status occurs (fig. 3).

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chung et al. (DE 100 50 936 A1) in view of Van Deventer (U.S. Patent US 5,886,801) and Buerli (U.S. Patent US 5,066,118), and further in view of Oberg et al. (U.S. Patent Application Publication US 2005/0084262 A1) (Oberg 1).

Regarding claim 2, Chung, Van Deventer, and Buerli have been discussed above in regard with claim 1. The modified system of Chung, Van Deventer, and Buerli differs from the claimed invention in that Chung, Van Deventer, and Buerli do not specifically disclose that the system comprises at least one of the remote nodes further includes a 3-port add/drop device coupled to the optical communication lines constructing the ring type distribution network. However, it is well known in that to include a 3-port add/drop device coupled to the optical communication lines constructing the ring type distribution network. For example, Oberg 1 discloses that a system comprises at least one of the remote nodes including a 3-port add/drop device coupled to the optical communication lines constructing the ring type distribution network (fig. 9b, node C). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate a 3-port add/drop device, as it is disclosed by Oberg 1, for a node in the modified system of Chung, Van Deventer, and Buerli in order to simplify the equipment configuration of the node.

7. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chung et al. (DE 100 50 936 A1) in view of Van Deventer (U.S. Patent US 5,886,801)

and Buerli (U.S. Patent US 5,066,118), and further in view of Oberg et al. (U.S. Patent Application Publication US 2003/0128984 A1) (Oberg2).

Regarding claim 3, Chung, Van Deventer, and Buerli have been discussed above in regard with claim 1. The modified system of Chung, Van Deventer, and Buerli differs from the claimed invention in that Chung, Van Deventer, and Buerli do not specifically disclose that the WDM filters are thin film WDM filters. However, it is well known in the art to use thin film filters for add/drop WDM filters. For example, Oberg 2 discloses using thin film filters for add/drop WDM filters (fig. 6a, paragraph 0040). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to use thin film filters for the add/drop WDM filters, as it is disclosed by Oberg 2, in the modified system of Chung, Van Deventer, and Buerli in order to separate the add/drop optical signals from the transmission line using the well developed filtering method.

Regarding claim 4, Chung further discloses a master transmitting/receiving unit (fig. 1, element 210 in ONU) and a slave master transmitting/receiving unit (fig. 1, element 220 in ONU); a control unit (fig. 1, control device 230) for detecting respective states of the master and slave transmitting/receiving units and a fiber breakage status (fig. 3, optical fiber breakage), thereby activating a selected one of the master and slave transmitting/receiving units to perform transmitting and receiving operations; and interfaces (fig. 1, MOD2 and DEM2) respectively connected to the master and slave transmitting/receiving units, each of the interfaces performing a data interfacing

operation between an associated one of the master and slave transmitting/receiving units and the optical network unit.

Regarding claim 5, Chung further discloses that the control unit disables a transmitter included in the transmitting/receiving unit associated with the currently-activated channel, and detects whether or not a receiver included in the associated transmitting/receiving trait can be switched to a link-on state, thereby determining whether or not a fiber breakage status occurs (fig. 3, optical fiber breakage).

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chung et al. (DE 100 50 936 A1) in view of Van Deventer (U.S. Patent US 5,886,801), Buerli (U.S. Patent US 5,066,118), and Oberg et al. (U.S. Patent Application Publication US 2005/0084262 A1) (Oberg1), and further in view of Oberg et al. (U.S. Patent Application Publication US 2003/0128984 A1) (Oberg2).

Regarding claim 9, Chung, Van Deventer, Buerli, and Oberg1 have been discussed above in regard with claim 2. The modified system of Chung, Van Deventer, Buerli, and Oberg1 differs from the claimed invention in that Chung, Van Deventer, Buerli, and Oberg1 do not specifically disclose that the WDM filters are thin film WDM filters. However, it is well known in the art to use thin film filters for add/drop WDM filters. For example, Oberg2 discloses using thin film filters for add/drop WDM filters (fig. 6a, paragraph 0040). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to use thin film filters for the add/drop WDM filters, as it is disclosed by Oberg2, in the modified system of Chung,

Van Deventer, Buerli, and Oberg1 in order to separate the add/drop optical signals from the transmission line using the well developed filtering method.

Response to Arguments

9. Applicant's arguments filed on 4/4/2008 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Koonen (U.S. Patent US 6,681,083 B1) discloses a power splitter for optical network.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quan-Zhen Wang whose telephone number is (571) 272-3114. The examiner can normally be reached on 9:00 AM - 5:00 PM, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Quan-Zhen Wang/
Primary Examiner, Art Unit 2613
6/21/2008